

University of Minnesota
Midwest Center for Occupational Health and Safety Education and Research Center
Annual Program Highlights
Reporting Period: July 1, 2012 – June 30, 2013
Principle Investigator: Susan Goodwin Gerberich, PhD, MSPH

Center Highlights

Continuing Education (CE)
Program Director: Julie Alcorn-Webb, MA

The MCOHS Continuing Education (CE) Program conducted 95 TOTAL courses during the past grant year. This program reached 5,425 trainees totaling 12,555 hours of training. Diverse training needs were met by offering a variety of course formats, including 21 online modules awarding CE credit, 66 in-person courses, and eight hybrid courses with attendees representing occupational health and safety professionals across disciplines. Additional outreach efforts included a total of 35 online archived occupational health and safety recordings and assets available for viewing. The CE Program continued to strengthen collaborations with the Wisconsin State and Minnesota Associations of Occupational Health Nurses, the Impairment Without Disability Occupational Medicine physicians, and local chapters of the American Industrial Hygiene Association and the American Society of Safety Engineers, by collaborating on regularly scheduled professional development programs and events. Overall, MCOHS CE programs extended to 50 states and 75 countries with participants representing 78 counties from our regional service area of Minnesota, North Dakota, South Dakota and Wisconsin.

Industrial Hygiene
Program Director: Gurumurthy Ramachandran, PhD

1. Exposure Assessment in the Taconite Industry

Drs. Ramachandran and Raynor and two PhD student trainees have conducted comprehensive measurements of personal exposures to elongated mineral particles (EMPs), and respirable dust and silica in six taconite mines in northeastern Minnesota in this project funded by the State of Minnesota. The results are also being used for an epidemiological study of mesothelioma, lung cancer, and silicosis in taconite workers. This project is relevant to the Mining sector of the National Occupational Research Agenda (NORA). It also addresses several of the priority Cross-sector research areas: exposure assessment; mixed exposures; respiratory disease; and epidemiology. The aims of this research are also key goals of the NIOSH Roadmap for Research relating to asbestos fibers and other EMPs (NIOSH, 2011) and will have impact at the national as well as regional levels: a) develop a broader and clearer understanding of the important determinants of toxicity for non-asbestiform EMPs, including dimensional attributes (length, width and aspect ratio); b) develop information on occupational exposures to various EMPs and associated health risks; c) enhance the understanding of different exposure metrics and their impact on disease measurement; d) evaluate the risk of specific disease in relation to these exposures.

2. Effects of Spray Surfactant and Particle Charge on Respirable Dust Control

A PhD student trainee is working with Dr. Raynor on a project to determine if sprays with surfactants having certain ionic properties can capture respirable dust particles carrying certain levels and sign of charge more effectively than sprays with surfactants having different ionic properties. The long-term goal

of this line of research is to reduce respirable dust concentrations in underground coal mines by improving engineering control technology. The objective of this specific project is to measure how efficiently sprays, containing different types and concentrations of surfactants, collect laboratory-generated aerosol particles carrying various levels of electrical charge. The objective is being achieved by accomplishing the following three specific aims: a) Design and build a test apparatus to measure the ability of sprays to collect airborne particles; b) Measure the spray collection efficiency for polystyrene latex (PSL) spheres using several spray surfactants; and c) Measure the spray collection efficiency for a polydisperse coal dust using several spray surfactants. Results, thus far, show that particle diameter is a more important determinant of spray collection efficiency than particle charge or spray surfactant type or concentration. Nonetheless, surfactant type and concentration affect collection efficiency significantly. In particular, particles that are strongly charged are collected much more efficiently by surfactant spray droplets with opposite charges than they are by surfactant sprays that carry the same charge. The expected outcome of this research will be a set of recommendations for surfactant types that can be used most successfully in sprays to enhance capture of respirable coal dust particles that carry specific signs and magnitudes of charge. The data generated in this study have national implications and will assist mine operators in making informed decisions about the type of surfactant to use in spray systems to maximize dust capture, depending on the characteristics of the coal being mined.

3. Measurement of Particle Sizes Associated with Airborne Viruses

Dr. Raynor is working with colleagues on a project to find optimal ways to measure the particle sizes with which live airborne viruses are associated. The long-range goal of this research is to identify ways to minimize the transmission of infectious viruses through air to people working in professions at risk. To determine what technologies and procedures will be most effective at reducing the transmission of virus-containing particles, we must know the size of particles with which viruses are associated. Therefore, the objectives of the research are to develop and validate a method to determine virus concentration in air as a function of particle size and to use the method to measure the particle sizes with which airborne viruses are associated in occupational settings.

Thus far, we have used non-viable impactors to successfully sample six different viruses in laboratory tests. In addition, we have sampled influenza viruses in swine production operations, with limited success in keeping the viruses live. Further laboratory research suggests that size separation followed by collection on dissolvable gelatin filters may keep the virus live longer than will collection by impaction. Critically important knowledge will be gained when a method is developed to measure the particle sizes with which viruses are associated. In particular, knowledge will be gained on how far infectious airborne viruses can be transmitted, how deeply into the lungs they may be inhaled, and the most effective manner for controlling airborne exposures to the viruses.

4. Assessing inhalation exposures of clean-up workers during the BP oil spill

A PhD student trainee is working with Dr. Gurumurthy Ramachandran to develop an inhalation exposure assessment strategy in the context of an epidemiological study being conducted by the National Institute of Environmental Health Sciences (NIEHS) to investigate adverse health effects of the workers engaged in clean-up after the BP oil spill. Exposures to several chemical agents are assessed over several time periods after the spill that are: a) derived from the type of task they were performing or proximity to a task in a given geographical location during the work shift; b) derived from the workers' location in the proximity of clean-up operations during non-work shift hours. Classification of workers into "exposure scenarios" are on the basis of a combination of job task, geographical location, and time point where workers' exposures are similar for the array of chemicals in the spilled oil as well as the dispersant to which the workers were exposed. Assessments are being carried out for total hydrocarbons, benzene, toluene, xylene,

ethylbenzene, n-hexane, total PAHs, 2-butoxy ethanol, propylene glycol, and PM2.5. Personal exposure and area concentration measurements are available from BP company records as well as from federal agencies such as NIOSH, USEPA, and NOAA. The data associated with each exposure scenario are used to estimate the arithmetic mean (AM), standard deviation (SD), geometric mean (GM), and geometric standard deviation (GSD). A vast majority of the data is below the limits of detection and, therefore, methods for censored data analysis such as the beta substitution method, the maximum likelihood estimation, and the Kaplan-Meier non-parametric methods have been evaluated. Bayesian techniques are also being developed for this purpose.

5. Respiratory Protection Programs in Acute Care Hospitals

This NIOSH-funded project is a collaborative effort with the University of Illinois Chicago to evaluate respiratory protection programs in acute care hospitals in Minnesota and Illinois, which will have a regional impact. The goals are to: a) compare written respiratory protection programs and hospital interview data among hospitals; b) compare respiratory protection policies to respiratory protection implementation in acute care hospitals in Illinois and Minnesota; and c) compare hospital manager, unit manager, and health care worker knowledge of respiratory protection procedures in Illinois and Minnesota. The project also examined the relation between safety climate (SC) measures and location (Minnesota or Illinois), demographic characteristics of participants, type of employees' and participants' responses about fit testing, and medical clearance and training; 15 hospitals in Minnesota and 13 hospitals in Illinois were recruited to participate in the second Respiratory Protection in Acute Care Hospitals study (REACH II). Written respiratory protection programs were collected from each hospital as well as interview responses from hospital managers (HM; n=88), unit managers (UM; n=82), and health care workers (HCW; n=364).

6. Midwest Emerging Technologies Public Health and Safety Training (METPHAST) Program

The key to avoiding health and safety issues with emerging technologies is to anticipate exposure risks and take action to mitigate them before they occur. To ensure that we anticipate these risks so that emerging industries grow without causing illness or injury to workers or the public, the University of Minnesota, the University of Iowa, and Dakota County Technical College have formed the METPHAST Program with recent funding from the NIEHS. Dr. Raynor is the principal investigator for the program and Dr. Ramachandran is a co-investigator. The objective of the METPHAST Program for the funding period is to develop a comprehensive array of focused, web-based modules that can be used by instructors to tailor education and training initiatives on nanotechnology health and safety to serve the unique needs of different learners. To achieve the objective, we are developing web-based materials to train professionals to work safely with engineered nanomaterials, establish on-line academic courses for undergraduate and graduate training on the principles of working safely with nanomaterials, and raise awareness of our modules, activities, and academic curricula through publications and conference presentations. Learners who will use training materials developed by the METPHAST Program will include: industrial hygiene students; students in other health, science, engineering, and technology disciplines; specialists who require focused continuing education on the health and safety of specific emerging technologies; and secondary and post-secondary students who may be exposed to individual lessons chosen by their instructors. This program is innovative because it will streamline and integrate academic and professional training to meet the needs of specific learners.

Occupational and Environmental Epidemiology

Program Director: Bruce H. Alexander, PhD

Co-Directors: Jeffrey H. Mandel, MD, PhD & Richard F. MacLehose, PhD

1. Evaluating the Impact of Mineral Dusts and Elongate Mineral Particles on Lung Disease in Taconite Miners

Drs. Alexander, Mandel, and MacLehose are working with three doctoral trainees on multiple studies of respiratory health in current and former employees of the taconite industry. Taconite mining and milling is a major industry in Minnesota, and the industry is expanding in Wisconsin and Michigan. The research has confirmed an association between past work in the taconite industry and mesothelioma and is exploring the potential role of taconite specific EMPs. Other ongoing research is examining taconite exposures and the risk of lung cancer and non-malignant respiratory disease. This work is directly related to the NORA mining sector goals of reducing the impact of lung disease in miners. It will also contribute to NIOSH goals outlined in the Asbestos Fibers and Other Elongate Mineral Particles: State of the Science and Roadmap for Research document. The study particularly focuses on exposures to elongated mineral particles of various definitions.

2. Persistence of PFOA in the Work Environment and Health Effects

Drs. Alexander and Church are working with a doctoral trainee a study of cancer incidence and mortality in workers employed at an ammonium perfluorooctanoate production facility. This chemical dissociates to perfluorooctanoic acid (PFOA) in the biologic systems. Potential health effects of PFOA and other fluorochlorinated chemicals are of particular current interest given the pervasive nature of the exposure to people and animals around the world. There are few opportunities to study occupational exposures of this chemistry and characterize health in people experiencing the highest exposures. A central focus of this study is developing exposure models that account for the persistent nature of the chemical in the body and evaluating exposure in age-specific windows. PFOA has a biological half-life of more than three years which can spread out the potential impact of shorter-term high exposure levels.

3. Occupational Ionizing Radiation Exposure and Cataract formation in Radiologic Technologists.

Drs. MacLehose and Alexander are working with a doctoral trainee on a study of cataract incidence in the U.S. Radiologic Technologists (USRT) study. The USRT is the largest study of workers exposed to medical ionizing radiation in the world. There is considerable growth in the use of medical imaging procedures and radiotherapy, which has contributed to a six-fold increase in average annual population dose from medical radiation since 1980. These frequently used procedures carry the risk of exposure to health providers. This research examines the potential effect of long-term, low dose ionizing radiation exposure on the risk of developing cataracts in a population of over 90,000 radiologic technologists. The study incorporates historical reconstructed occupational dosimetry and estimates of ultraviolet radiation exposure, based on satellite data and residential history, as well as other factors related to cataract development.

**Occupational and Environmental Health Nursing
Program Director: Patricia M. McGovern, PhD**

1. Undergraduate course introduces environmental and occupational health career options to pre-nursing and liberal arts students:

Dr. Debra Olson developed "Issues in Environmental and Occupational Health," PubH 3102 (3 credits), an undergraduate option that meets the requirements of the Council on Liberal Education to help inform pre-nursing and liberal arts students of the possible career options in environmental and occupational

health; this was taught by Dr. Nachreiner. Offered on the Internet, it allows for regional access to potential candidates and now attracts over 100 students annually. Sixteen online modules were completed for the introduction of occupational health concepts from theory and practice to women in the trades. Marketing of these opportunities to labor unions, undergraduate programs and other organizations will promote integration of occupational health and safety content into curricula and workforce training. Dr. Olson is Chair of the Provost's Online Education Committee, which is charged with increasing collaboration, communication, and strategic planning for the advancement of learning in a technology rich environment throughout the University of Minnesota.

2. Public Health Institute Reaches 250 participants to provide over 600 total credits to students from across the globe:

Dr. Debra Olson leads the School of Public Health's Public Health Institute (PHI), an annual event that is a forum for discussion of emerging public health issues and experiential learning; courses are offered for graduate level academic credit or continuing education. An average of 250 unique participants register for over 600 total credits. Faculty and students from several countries and states in the U.S. attend the PHI each year, reflecting a new era of interdisciplinary collaboration to strengthen and advance global environmental and occupational health perspectives and global public health practice and leadership. The Institute, now in its twelfth year, features approximately 50 public health-related courses. Courses have been developed in different concentration areas and now include courses in: Applied Biostatistics and Research Methods; Culturally Responsive Public Health Practice; Environmental Health Sciences (e.g., "Ergonomics and Prevention of Workplace Hazards," "Personal Protective Equipment and Respiratory Protection"); Food Protection; Global Health; Infectious Disease Epidemiology; Public Health Leadership and Management; Public Health Preparedness, Response and Recovery; and Woman and Child Health and Nutrition.

3. Testing a Sharps Injury Prevention and Biomedical Waste Program in Northern India:

Indian hospitals often do not have the resources to invest in safety devices and protective equipment to decrease this risk. In collaboration with hospital staff, an OEHN doctoral student designed and implemented a sharps injury prevention and biomedical waste program in an urban 60-bed charity hospital in northern India. The program aligned with hospital organizational objectives and was designed to be low-cost and sustainable. Occupational health nurses working in international settings or with international workers should be aware of employee and employer knowledge and commitment to occupational health and safety. This doctoral student's paper was recently published in *Workplace Health and Safety* (2013; 61:339–345).

4. Development of a Return on Investment Tool: Contributions to Worker Health and Safety:

An OEHN PhD student was awarded Second Place in the poster category for Practice at the 2012 American Association of Occupational Health Nurses (AAOHN) Conference. Her presentation, "Development of a Return on Investment Tool: Establishing the Value of Occupational Health Nurses' Contributions to Worker Health and Safety," was co-authored by Drs. McGovern and Nachreiner and is in press in *Workplace Health and Safety*.

5. Early work patterns for gynecological cancer survivors in the US:

With over 4.3 million working-age cancer survivors in the United States, there is a critical need to understand factors that help and hinder survivors' ability to return to work during and after cancer

treatment. Dr. Nachreiner has led efforts to identify changes in work status for gynecological cancer survivors during the first six-months following diagnosis and the survivors' experience with their employers' programs and policies; 110 gynecological cancer survivors who were working at the time of their cancer diagnosis completed a survey and medical record review, resulting in identification of their experiences at work during and after cancer treatment. Opportunities exist to improve communication about work and treatment expectations among cancer survivors, occupational health professionals, employers and treating clinicians. This research focus complements other research within the NIOSH Total Worker Health Program that currently explores employer support for work and family balance. Dr. Nachreiner's findings were recently published in *Occupational Medicine* (2012; 62:23-28).

6. Policy and public health aspects addressing postpartum depression presented at Postpartum Support International Annual Meeting:

In a first-time outreach activity to Postpartum Support International (PSI), Professor McGovern joined with Katy Kozaminil, PhD, Assistant Professor, Health Policy and Management, Dwenda Gjeringen, MD, Professor, Family and Community Medicine, and a doctoral student in Health Policy and Management, University of Minnesota, to provide a multidisciplinary perspective from studies investigating the interplay among maternal employment, social support and postpartum depression, the health system issues that underlie racial and ethnic disparities, and the potential impact of health reform and health insurance coverage on access to care for women. This venue provided an opportunity to translate research to practice (r2p) with its audience of health care providers, childbirth professionals, support and resource providers, caregivers, policy-makers, researchers, volunteers, families, and educators, consistent with the NIOSH's Total Worker Health™ initiative.

Occupational Injury Prevention Research

Program Directors: Susan Goodwin Gerberich, PhD, MSPH & Bruce H. Alexander, PhD

1. Incidence and Consequences of and Risk Factors for Injuries among Agricultural Household Members

Drs. Gerberich and Alexander, team of Co-Investigators, and doctoral trainees, lead major injury prevention studies that are the basis of regional research-to-practice efforts. These include surveillance studies of the incidence and consequences of, and risk factors for, agricultural and other injuries in Minnesota, Wisconsin, North and South Dakota and Nebraska. The study results and identification of intervention efforts are translated to practice through collaboration with regional Agricultural Extension leaders who work directly with operators and communities. Dissemination has also been accomplished through numerous peer-reviewed publications and presentations in local, national and international arenas. Funded by NIOSH RO1 grants, these efforts address the Agriculture, Forestry and Fishing sector and cross-sectors of Surveillance, Exposure Assessment, and Traumatic Injury.

2. Violence against Nurses: The Next Step

Identification of risk factors for work-related physical assault by Dr. Gerberich, Co-Investigators, and PhD trainees, are particularly important to application of relevant interventions. These risks include working in environments with low lighting, not carrying cell phones or alarms, working in emergency and psychiatric departments and long-term care facilities, and increasing hours of patient contact.

Dissemination to professionals has been accomplished through numerous peer-reviewed publications and professional presentations. A collaborative effort with NIOSH also resulted in development and recent completion of an online violence prevention course for health care workers and others that incorporates results from this and related studies (http://www.cdc.gov/niosh/topics/violence/training_nurses.html). This NIOSH RO1-Funded effort addressed the Healthcare and Social Assistance Sector and Cross-sectors of Exposure Assessment and Traumatic Injury.

3. Preventing Violence against Teachers/Educators

Dr. Gerberich, research team members, and PhD trainees have been providing translation of research data from the Minnesota study of "Violence Against Teachers: Etiology and Consequences," to practice throughout the school systems. Risk factor identification, which serves as a basis for development of relevant interventions, includes consideration of various environmental factors, assault deterrents, violence policies, and school financial resources. To date, results have been presented at numerous major professional meetings, including audiences involving teachers, and in numerous peer-reviewed publications. Funded by a NIOSH RO1 grant, this effort addressed the Services Sector of Education and Cross-sectors of Exposure Assessment and Traumatic Injury. An OIPRTP doctoral Candidate, recently published an article, based on an analysis generated from the NIOSH-funded Minnesota Educators' Study that investigated the incidence and severity of, and risk factors for work-related violence (R01 OH 007816). (Wei C, Gerberich SG, Alexander BH, Ryan AD, Nachreiner NM, Mongin SJ. Work-related violence against educators in Minnesota: Rates and risks based on hours exposed, *Journal of Safety Research* 2013;44:73–85.)

4. Risk Factors for Injuries in Small- and Medium-Sized Construction Companies

Former Trainee Katherine E. Schofield, MEHS, PhD, ASP, ARM, CHST (Research Mentor: Dr. Alexander) With Dr. Alexander, Dr. Schofield was awarded a CPWR - Center for Construction Research and Training/NIOSH, Small Study Grant, (OH009762) that enabled completion of her dissertation. A recent publication from her dissertation addressed the relation between drug testing programs and injury: Schofield KE, Alexander, BH, Gerberich, SG, Ryan, AD. Injury rates, severity, and drug testing programs in small construction companies. *Journal of Safety Research* [2013]:44:97-104, 2013. This effort addressed the Construction Sector and Cross-sectors of Exposure Assessment and Traumatic Injury.

5. Occupational Injury among Bus Drivers in the Minnesota Metropolitan Area

A doctoral candidate (Research Mentor: Dr. Gerberich) is conducting this study that is a collaborative Pilot Projects Research effort with the Department of Mechanical Engineering, University of Minnesota (Dr. Michael Manser, PI), and a metropolitan transit company, to investigate the relation between personal and work-related characteristics and the occurrence of work-related injuries among approximately 1,500 bus operators in the Minneapolis metropolitan area. The first step involves determination of the magnitude of and potential risk factors for occupational injuries among the bus drivers; analysis includes identification of incidence rates and overall magnitude of the injury problem, using a cross-sectional approach. The second step, using a nested case-control study design, involves determination of the association between occupational injury and exposures of interest, including various environmental factors using multivariate analyses, based on the conceptual and causal models for this study. This enables identification of risk factors that will serve as a basis for development and application of intervention strategies to reduce injuries in the future that will benefit both employers and

employees. This effort addresses the Transportation, Warehousing, and Utilities sector and cross-sectors of Exposure Assessment and Traumatic Injury.

6. Crashes Involving Civilian Drivers and Emergency Vehicles

A doctoral candidate (Research Mentor: Dr. Gerberich) is completing a comprehensive study of motor vehicle crashes involving civilian and emergency vehicles (EVs; police, fire trucks, ambulances, etc.). EV crashes have been a known problem that contributes to fatal and nonfatal injuries; however, characteristics associated with civilian drivers, involved in these crashes, have not been examined adequately. This two-phase study analyzed data from: Phase 1) The National Highway Traffic Safety Administration's Fatality Analysis Reporting System and the National Automotive Sampling System General Estimates System to identify driver, roadway, environmental, and crash factors, and consequences for civilian drivers involved in fatal and nonfatal crashes with in-use and in-transport EVs (Drucker C, Gerberich SG, Manser MP, Alexander BH, Church TR, Ryan AD, Becic E. Accident Analysis and Prevention [2013]; 55:116–123.) and Phase 2) development and implementation of a driver simulator program in the Department of Mechanical Engineering, Human Factors Interdisciplinary Research in Simulation and Transportation Program, based on Phase 1, to examine the impact of two driver support systems on driving performance measures under distracting and non-distracting conditions. Resulting data will be used for recommendations regarding interventions to mitigate crash events involving civilian drivers and emergency vehicle driver employees. This effort addresses the Transportation, Warehousing, and Utilities sector and cross-sectors of Exposure Assessment and Traumatic Injury.

Occupational and Environmental Medicine

Program Directors: Jeffrey H. Mandel, MD, MPH, Academic Program

Jon O'Neal, MD, MPH, Residency Program

1. On-Site Exposure Assessment

Personal and area samples have been completed in all six active mines in Northern Minnesota for elongate mineral particles (EMPs), silica and respirable dust concentrations using current onsite and historical exposure measurements. (See Industrial Hygiene (IH) Program report, also.)

2. Environmental Characterization of Dust in the Communities

Through the University of Minnesota's Natural Resources Research Institute, in conjunction with IH and OEM faculty, characterization of dusts in communities that are in close proximities to the active mines in Northern Minnesota has been completed. This included longitudinal sampling from a dozen sites in communities across Minnesota's iron range as well as analyses of sediments from lakes in close proximities to some mines. Findings will provide insights into the potential for community exposures from mining activities.

3. Respiratory Health Survey of Current and Former Miners and Spouses

A survey has been conducted among 1200 current and former workers and 500 spouses. The evaluation included a detailed work and medical history questionnaire, chest x-rays, spirometry, diffusion lung capacity and alveolar volume testing. Detailed exposure information has been incorporated into assessments of test findings in workers and spouses. Insights will be obtained into the

relation between elongated mineral particle (EMP), silica and respirable dust exposures and lung anatomy measured by chest x-ray and physiological function as measured by spirometry, DLCO and alveolar volume. Findings will have impact in terms of understanding exposure-disease relations in this industry.

4. General Mortality Assessment of Workers in Minnesota's Taconite Industry

A mortality study of workers in the industry born on or after 1920 has been completed. Causes of death have been categorized with subsequent standardized mortality ratios (SMRs), determined for approximately 46,000 individuals who worked in the industry since its inception in the 1950s. This assessment will contribute knowledge of the death experience for workers in this industry. (See Occupational and Environmental Epidemiology (OEE) Program report, also.)

5. Epidemiologic Investigation of Mesotheliomas in Taconite Miners

Through the Minnesota state's cancer registry and by death certificate evaluation from across the U.S., researchers have identified 80 cases of Mesothelioma in a cohort of Minnesota taconite workers. Using nested case-control study methods, an assessment of the relation between workplace exposures and health outcomes has been made. (See OEE Program report, also.)

6. Epidemiologic Investigation of Lung Cancer in Taconite Miners

Approximately 1400 lung cancer cases have been identified in the same manner, as for Mesotheliomas (noted above), within the taconite cohort. Case-control study methods are also being used to assess the role of workplace exposures. In both studies, exposures to elongated mineral particle (EMP), silica and respirable dust are being assessed. Lung cancer findings will be categorized within four tissue types, since the state's cancer registry is based on histological information. These assessments will impact the understanding of disease risk associated with a spectrum of EMP exposures, in combination with silica and respirable dust. (See OEE report, also.)

Further details on all of these projects are available at: www.taconiteworkers.umn.edu

Occupational Health Services Research and Policy Program **Program Directors: Patricia M. McGovern, PhD & Byran Dowd, PhD**

1. Special Issue of Health Services Research Highlights Micro-Simulation Studies:

Professor Dowd co-edited, with Michael Hagan of the Agency for Healthcare Research and Quality (AHRQ), a special issue of Health Services Research featuring micro-simulation studies. Published in 2013, this issue includes papers that highlight the use of simulation techniques in rigorous, empirical health services research, especially articles which address methodological challenges and solutions to problems when using these techniques, as well as articles that feature simulations such as supply-side simulation, health care costs, and health care policy. Collectively, the articles showcase methodological innovation in simulation, provide concrete examples of the application of such methods, and address specific policy or intervention contexts. Simulation techniques provide timely guidance to decision-makers in the development of legislation, regulation, policy, and management because they can be used to evaluate effects of proposed interventions before they are implemented in the real world. Important policy contexts for selected simulation articles include health care reforms, technological

change, new global and public health challenges, market-driven organizational changes, and demographic changes.

2. New "Methods Corner" in Health Services Research:

Professor Bryan Dowd introduced a new, occasional series section of Health Services Research, the "Methods Corner," which aims to improve the practice of health services research. This section is devoted to explaining common estimation problems that arise in health services research and providing readers with the correct solution to the problem and computer code that allows the analyst to implement the solution. The series was introduced in an edition of Health Services Research (volume 47, Issue, part 1, 2012) and begins with an article entitled "Interaction Terms in Nonlinear Models" by Karaca-Mandic and colleagues which describes the best approach for estimating and presenting the results of nonlinear regression models that include interaction terms among the explanatory variables. While this topic has recently received attention in the economics literature, practice remains suboptimal in many of the articles submitted to Health Services Research and other journals in our field.

3. OHSRP trainee awarded Academy Health's Outstanding Dissertation Award:

Helen Parsons, PhD, OHSRP alumna, received the Outstanding Dissertation Award at the annual Academy Health Annual Research meeting. Her dissertation, "A Culture of Quality? Lymph Node Evaluation for Colon Cancer Care," has earned this prestigious award which honors an outstanding scientific contribution from a doctoral thesis in health services research. Her research analyzed whether the number of lymph nodes was correlated with improved survival of individuals with colon cancer. Her work found that patients who had at least 15 nodes excised, also known as adequate lymphadenectomy, as opposed to those with one to seven nodes, experienced improved survival; this resulted in publications in JAMA, Medical Care, the Journal of the American College of Surgeons, and the Journal of Oncology Practice. Dr. Parsons is now working with the University of Texas Health Science Center at San Antonio in the Department of Epidemiology and Biostatistics.

4. New Partnership with the JourneyWell Program of HealthPartners Institute for Education and Research Opens Student Research Training Opportunities:

An OHSRP doctoral trainee is conducting an evaluation of the association between prolonged sitting and inactivity on back pain and productivity loss for a large employer enrolled in the JourneyWell Program. Working in collaboration with Dr. Nico Pronk, Vice- President and Health Science Officer for JourneyWell at HealthPartners, Professor McGovern, and dissertation committee members, Ms. Briggs' research will shed light on the independent effect and interactions of moving more and sitting less in association with back pain and productivity loss; this will contribute to the development of prevention strategies for employers in the service industry. This research training opportunity was supported by the Midwest Center for Occupational Health and Safety Educational Research Center Pilot Research Training Program (OH008434).

5. Time off work after childbirth decreases the risk of postpartum depression in new mothers:

Increased duration of leave from work after childbirth is associated with a decrease in depressive symptoms through six months postpartum. Findings from the Minnesota Postpartum Health Study revealed that the current leave duration provided by the Family and Medical Leave Act -- 12 weeks -- may not be sufficient for employed mothers at risk for or experiencing postpartum depression. This study examined the association of leave duration with depressive symptoms, mental health, physical

health, and maternal symptoms in the 12 months after childbirth, using a prospective cohort design in a sample of employed women, 18 years or older, enrolled from three metropolitan Minnesota hospitals while hospitalized for childbirth. In the first postpartum year, an increase in leave duration is associated with a decrease in depressive symptoms until six months postpartum, revealing the impact of leave benefits in helping workers balance work and family commitments -- consistent with NIOSH's Total Worker Health™ initiative. A publication is in press with the Journal of Health Politics, Policy and Law authored by alumna, Rada Dagher, PhD, Assistant Professor, Department of Health Services Administration School of Public Health, University of Maryland and Professors McGovern and Dowd. This research was funded, in part, by the grant 5R18 OH003605-05 from the National Institute for Occupational Safety and Health. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of NIOSH. The 20th Anniversary of the Family and Medical Leave Act (FMLA) is a focus of Wisconsin Public Radio's Joy Cardin's Hour; John Munson, in for Joy Cardin, questioned Professor Pat McGovern if the Family Medical and Leave Act, has lived up to expectations since it passed 20 years ago, after eight years of conflict and compromise in Congress? Professor McGovern discussed how employees use FMLA, and changes needed for more effective use of this benefit. Available online: <http://www.wpr.org/wcast/download-mp3request.cfm?mp3file=jca130808a.mp3&iNotelD=164437>

Pilot/Small Projects Program
Program Director: Gurumurthy Ramachandran, PhD

The primary objectives of this program are to: a) explore and develop new and creative exploratory, prevention/intervention and translation projects relevant to the National Occupational Research Agenda (NORA) and regional needs; b) enhance research capacity in occupational safety and health (OSH) in the region served by the Midwest Center for Occupational Health and Safety (MCOHS) Education and Research Center (ERC); c) stimulate investigators from other fields to apply their expertise to OSH issues; d) develop collaborative partnerships with local and regional institutions to address emerging safety and health concerns; and e) provide a forum for dissemination of research. Since 2010, we have received 28 proposal applications from which 17 have been funded. In the current reporting period, the MCOHS funded seven proposals. The awardees are from diverse institutions including the Metropolitan Airports Commission, the North Dakota Department of Health, Marshfield Clinic - Wisconsin, the Chemical Threat Preparedness Coordinator of the Minnesota Department of Health, the Carlson School of Management Finance Department, and the Division of Environmental Health Sciences.

One recently MCOHS ERC funded Pilot Projects proposal (Farm Mapping to Assist, Protect and Prepare Emergency Responders - Farm Mapper) received wide publicity and has been reported through several media outlets including: Associated Press; ABC News; The Washington Post; Minneapolis Star Tribune; and a Los Angeles talk show (<http://kfwbam.com/2013/05/25/wis-farmers-firefighters-partner-on-hazards-maps/>). Agriculture remains one of the nation's most dangerous professions, resulting in hundreds of fatalities and thousands of injuries each year. To assist rescuers in reaching people quickly and safely, Wisconsin farmers have been collaborating with researchers and firefighters in an online program that maps farm hazards. The recently completed project was conducted by researchers at the Marshfield Clinic and National Farm Medicine Center who anticipate expansion, with the online program eventually being used nationwide. The concept is simple: Farmers enter information into a password-protected database. A Quick Response, or QR, code is posted on the farm's mailbox or in another prominent location. Arriving firefighters scan the code with their smart phones or tablets to receive information about stored chemicals and other hazards, and where to disconnect power and potential sources of water. State law requires many industries and public places

to allow firefighters into their properties for inspections; but, most farms are not part of that list. This program helps to bridge that gap. An advantage of having the information in a database is that firefighters can access it before they reach the farm. They might scan a farm's QR code from a manual kept in their truck or, eventually, link the information into the dispatch system so they receive it as soon as they receive an emergency call.